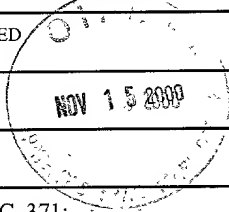


| | | | |
|---|---|--|--|
| FORM PTO-1390 (REV. 11-94) | | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTORNEY'S DOCKET NUMBER 9435-021 09/700646 |
| TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) | | | |
| INTERNATIONAL APPLICATION NO. PCT/SE99/00821 | INTERNATIONAL FILING DATE May 12, 1999 | PRIORITY DATE CLAIMED May 15, 1998 | |
| TITLE OF INVENTION REMOTELY CONTROLLED POWER SUPPLY IN AN ELECTRONIC LABEL | | | |
| APPLICANT(S) FOR DO/EO/US Lars Andersson | | | |



Applicant herewith submits to the United States Designated/ Elected Office (DO/EO/US) the following items under 35 U.S.C. 371:

- ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
- ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
- ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
- ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
- ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - ☐ is transmitted herewith (required only if not transmitted by the international Bureau).
 - ☒ has been transmitted by the International Bureau.
 - ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
- ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - ☐ have been transmitted by the International Bureaus.
 - ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - ☐ have not been made and will not be made.
- ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 37(c)(3)).
- ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
- ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

- ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
- ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
- ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
- ☐ A substitute specification.
- ☐ A change of power of attorney and/or address letter.
- ☒ Other items or information: Power of Attorney by Assignee

527 Rec'd PCT/PT 15 NOV 2000

INTERNATIONAL APPLICATION
PCT/SE99/00821

09/700646

INTERNATIONAL FILING DATE
May 12, 199917. ☒ The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees as follows:

CLAIMS

| (1)FOR | (2)NUMBER FILED | (3)NUMBER EXTRA | (4)RATE | (5)CALCULATIONS |
|--|--------------------|--------------------|-------------|-----------------|
| TOTAL CLAIMS | 11 - 20 | 0 | X \$ 18.00 | \$ 0.00 |
| INDEPENDENT CLAIMS | 4 - 3 | 1 | X \$ 80.00 | 80.00 |
| MULTIPLE DEPENDENT CLAIM(S) (if applicable) | | | + \$ 260.00 | \$ 0.00 |
| BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): CHECK ONE BOX ONLY | | | | |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) \$ 690 | | | | |
| <input type="checkbox"/> No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$ 710 | | | | |
| <input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$ 1000 | | | | \$ 1,000.00 |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2) to (4) \$ 100 | | | | |
| <input type="checkbox"/> Filing with EPO or JPO search report \$ 860 | | | | |
| Surcharge of \$130.00 for furnishing the National fee or oath or declaration later than 20 30 mos. from the earliest claimed priority date (37 CFR 1.492(e)). | | | | |
| TOTAL OF ABOVE CALCULATIONS | | | | = 1,080.00 |
| Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed also. (Note 37 CFR 1.9, 1.27, 1.28). | | | | - \$ 0.00 |
| SUBTOTAL | | | | = 1,080.00 |
| Processing fee of \$130.00 for furnishing the English Translation later than 20 30 mos. from the earliest claimed priority date (37 CFR 1.492(f)). | | | | + 0 |
| TOTAL FEES ENCLOSED | | | | \$ 1,080.00 |

- a. ☐ A check in the amount of \$__ to cover the above fees is enclosed.
- b. ☒ Please charge Deposit Account No. 16-1150 in the amount of \$ 1,080.00 to cover the above fees. A copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 16-1150. A copy of this sheet is enclosed.

18. ☐ Other instructions
n/a19. ☒ All correspondence for this application should be mailed to
PENNIE & EDMONDS LLP
1155 AVENUE OF THE AMERICAS
NEW YORK, NEW YORK 10036-271120. ☒ All telephone inquiries should be made to (212) 790-2803Jonathan A. Marshall
NAME

SIGNATURE

24,614

REGISTRATION NUMBER

15 Nov 00
DATE

09/700646

532 Rec'd PCT/PTO 15 NOV 2000

Express Mail No.: EL 501 635 410 US



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Lars Andersson

Application No.: TBA

Group Art Unit: TBA

Filed: Herewith

Examiner: TBA

For: REMOTELY
CONTROLLED POWER
SUPPLY IN AN
ELECTRONIC LABEL

Attorney Docket No.: 9435-021

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please enter the following preliminary amendment in the above-identified application.

AMENDMENT

IN THE CLAIMS

Please cancel claims 1-6 without prejudice.

Please add the following new claims:

7. (new) A method for controlling the use of power in an electronic label comprising a power supply means, transmitter means, switching means for said transmitter means, charge pump means for producing a current at a voltage which is greater than the voltage of said power supply, control means for selectively connecting said charge pump means to a transmitter capacitor, whereby said transmitter capacitor is connectable to said transmitter means in order to supply said transmitter means with power at a voltage which is greater than the voltage of

said power supply, comprising the step of supplying said transmitter capacitor with power from said charge pump after a signal intended for said label has been received by said receiver means.

8. (new) The method according to claim 7, comprising the step of said switching means being supplied with power from said charge pump at a voltage which is greater than the voltage of said power supply.

9. (new) The method according to claim 7, comprising the step of said transmitter capacitor being supplied with power from said charge pump for a predetermined period of time or until a final message in a communication has been transmitted by said transmitting means.

10. (new) The method according to claim 9, comprising the step of said switching means being supplied with power from said charge pump at a voltage which is greater than the voltage of said power supply.

11. (new) An electronic label comprising a power supply, receiver means, transmitter means, switching means, charge pump means for producing a current at a voltage which is greater than the voltage of said power supply, control means for selectively connecting said charge pump means to a transmitter capacitor, whereby said transmitter capacitor is connectable to said transmitter means in order to supply said transmitter means with power at a voltage which is greater than the voltage of said power supply, wherein said control means comprises control logic means which determine if a received signal requires a reply to be transmitted and which connect said charge pump means to said transmitter capacitor if a reply is required.

12. (new) An electronic label in accordance with claim 11, wherein said switching means is connectable to said charge pump in order to be supplied with a voltage which is greater than the voltage of said power supply.

13. (new) An electronic label in accordance with claim 11, wherein said charge pump comprises an additional power supply.

14. (new) A method for controlling the use of power in an electronic label comprising transmitter means, a transmitter capacitor, charge pump means, control means for connecting said charge pump means to said transmitter capacitor, whereby said transmitter capacitor is connectable to said transmitter means, the method comprising: said control means determining when it is likely that the label will need to transmit and subsequently, as a response, connecting said charge pump means to said transmitter capacitor.

15. (new) The method according to claim 14, wherein the control means breaks the connection between said charge pump means and said transmitter capacitor if no transmission is to take place.

16. (new) An electronic label comprising transmitter means, a transmitter capacitor, charge pump means, control means for connecting said charge pump means to said transmitter capacitor, whereby said transmitter capacitor is connectable to said transmitter means, wherein said control means determines when it is likely that the label will need to transmit and subsequently, as a response, connects said charge pump means to said transmitter capacitor.

17. (new) An electronic label in accordance with claim 16, wherein the control means breaks the connection between said charge pump means and said transmitter capacitor if no transmission is to take place.

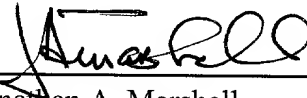
REMARKS

By this preliminary amendment, applicants respectfully request that the claims as filed be amended as described above. It is believed that the present application is in condition for allowance. Such action is respectfully requested.

Respectfully submitted,

Date

15 Nov 00



24,614

Jonathan A. Marshall

(Reg. No.)

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REMOTELY CONTROLLED POWER SUPPLY IN AN ELECTRONIC LABEL

The present invention relates to a remotely controlled electronic device for displaying price information of the type according to the preamble of the independent claims.

5 Such remotely controlled electronic price displaying devices, called electronic labels for short, are used in supermarkets and the like to display the price and other information about the goods on the shelves of the supermarket. Such devices are known form, for example patent application WO 95/25300. This document teaches a central control unit in wireless communication via nodes with a plurality of
10 electronic labels wherein each label is provided with a receiver to receive messages from the nodes and a transmitter to send messages to the nodes. Typical messages sent by the central control unit include price update information. The price information data transmission usually commences with a code which identifies the label or group of labels which the message is addressed to and the messages sent by
15 the electronic labels usually merely consist of an acknowledgement of the update information.

The labels transmit infra red (IR) signals and power for these transmissions is provide by a battery in each label. The IR signals are transmitted by means of LEDs
20 which consume a current of the order of 1.5-2 amps at a voltage of 6 volts. This corresponds to a demand of 3-4 A on a 3V power supply. The label battery which has a nominal voltage of 3 V is chosen to be small in order to reduce the size and cost of the label and is not even able to deliver a peak current of 1.5-2 A. Therefore the label is provided with a transmitter capacitor which accumulates the energy
25 needed by the LED in order to transmit IR signal.

A problem with the prior art electronic labels is that all capacitors suffer from leakage which slowly diminishes their stored charge. In electronic labels this reduced stored charge in the transmitter capacitor leads to a reduced signal strength
30 of the signal transmitted by the LED and can result in communication failure. In order to prevent this the electronic label must ensure that the transmitter capacitor is

always properly charged. The charge in the transmitter capacitor is therefore monitored by the control means of the electronic label such as a microprocessor or application specific integrated circuit and the charge in the transmitter capacitor is topped up whenever it falls below a certain level. This leads to increased power consumption which decreases the life of the battery in the electronic label. In order to overcome this problem it is possible to use high specification capacitors with very low leakage currents. This leads to increased manufacturing costs.

A first object of the present invention is to provide an electronic label which overcomes the disadvantages of the above-mentioned prior art electronic labels.

This object is achieved by means of a device having the characteristics cited in the appended claims.

A device formed in accordance with the invention has a reduced power consumption because the transmitter capacitor is only fully charged when it is needed in order to provide the LED with energy. Therefore no energy is wasted in maintaining the capacitor at a fully charged level. Furthermore lower specification (and consequently cheaper) capacitors can be used as they are only fully charged for short periods of time, of the order of a few seconds, and hence even with large leakage currents they can retain sufficient charge to ensure reliable communications.

The invention will now be described in more detail by means of illustrative embodiments and with reference to the accompanying drawings in which:

Figure 1 shows a block diagram of an electronic label in accordance with one embodiment of the invention.

Figure 2 shows a block diagram of a transmitter capacitor charging circuit in accordance with one embodiment of the present invention.

Figure 3 shows a block diagram of a transmitter capacitor charging circuit in accordance with a second embodiment of the present invention.

5 Figure 4 shows a block diagram of a transmitter capacitor charging circuit in accordance with a third embodiment of the present invention.

10 Figure 1 shows a first embodiment of an electronic label 1 in accordance with the present invention. Label 1 comprises an application specific integrated circuit (ASIC) 3 which contains the program logic necessary to operate the electronic label 1. ASIC 3 is supplied with electrical power from a power supply such as a lithium battery 5 via a voltage regulator 7. ASIC 3 sends instruction to display driver means such as LCD driver 9 which causes information to appear on display means such as LCD display 11. ASIC 3 is also connected to a timer 13 and to receiver means such as IR-receiver 15 and transmitter means such as IR-transmitter 17. ASIC 3 has memory means such as memory 19 in which price information and the like can be stored.

15
20 Figure 2 shows an embodiment of a transmitter capacitor charging circuit 21 which is controlled by ASIC 3. ASIC contains a charge pump drive stage 23' connected to a charge pump capacitor 23'' which together form a charge pump 23 which doubles the battery voltage of 3V to 6V and stores the 6V charge on charge pump capacitor 23''. This charge at a voltage of 6V can be then supplied via a resistor 25 to transmitter capacitor 27. Transmitter capacitor 27 is connected to a transmitter circuit comprising the IR transmitter LED 29 and a switching means for said transmitter 29 in the form of transistor 31. ASIC 3 contains control logic 33 which controls the charge pump 23 (via charge pump drive stage 23') and a driver 35 for transistor 31. If the charge pump 23 is activated by control logic 33 and the transistor 31 is not connected to earth then current flows through resistor 25 to capacitor 27. When capacitor 27 is charged the charge pump can be deactivated. When it is necessary to transmit an IR signal ASIC control logic 33 connects

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transistor 31 to earth and current will flow from transmitter capacitor 27 through LED 29 to transistor 31 and then to earth.

In order to activate transistor 31 driver 35 must supply the gate of transistor 31 with a voltage which is of the same order as the voltage on the drain of transistor 31, i.e. 6V. This is twice the battery voltage and can be provided by a driving capacitor 37 which can be connected via switch 38 to charge pump 23 in order to be charged up to a voltage of 6 Volts. Switch 38 is controlled by control logic 33 and can also be used to connect driver 35 to the power supply in order to control transistor 31.

Transistor driver 35 can connect transistor 31 to earth thereby allowing current to flow from transmitter capacitor 27 through the LED 29 which thereby can be made to send pulses of data by suitable pulsing of transistor 31.

In order to save battery power ASIC 3 only connects the charge pump 23 to the transmitter capacitor 27 when it receives a signal which it has to acknowledge. This can be implemented by control logic 33. In order to avoid unacceptable delays in acknowledging messages the charge pump 23 can be so dimensioned that it can fully charge transmitter capacitor 27 in a short time, for example 1 or 2 seconds. If the transmission capacitor has a capacitance of 44-47 TF at 6V then the charging current required from the battery 5 at 3V to charge the transmitter capacitor 27 in 1-2 seconds will be of the order of 250-800 TA depending on the efficiency of the charging process. This low current can be easily supplied by a small lithium battery such as a CR 2032 battery. Thus if a node sends out a signal intended to, for example, change the price information on a label then the node transmits a message containing the address of that label. When that label receives any messages from a node containing its own address, its control logic 33 can immediately command the charge pump 23 to start charging transmitter capacitor 27 in order that the label can quickly transmit a reply if it becomes necessary. If the control logic 33 determines that the received message does not require a reply then control logic 33 commands the charge pump 23 to stop charging transmitter capacitor 27. If the received

message requires a reply then the energy stored in transmitter capacitor 27 can be used in the normal way to power LED 29. If the charge on transmitter capacitor 27 becomes depleted during the course of communication between the label and a node then the charge pump is activated to top up the charge on transmitter capacitor 27.

5 This is continued until the final message in a communication is transmitted by the label. The charge on transmitter capacitor 27 can then be retained for a predetermined amount of time so that in the event of a new message being received it is ready to reply or it can be discharged to earth without activating LED 29.

10 In a second embodiment of the invention as shown in figure 3 the use of a driving capacitor 37 can be eliminated in order to reduce the number of components required. The driving capacitor can be eliminated by directly using charge pump capacitor 23'' to supply a 6V current to transistor 31. This requires that after being discharged in order to fully charge transmitter capacitor 27, as explained above with
15 reference to the first embodiment of the invention, the charge pump capacitor 23'' is recharged to 6V and held at this voltage while communications are being made between the label 1 and control node(s) in case it becomes necessary to activate switching transistor 31. This can be accomplished by amending the control logic 33 which can be made to hold charge pump capacitor at the desired voltage level for a
20 predetermined period of time or until communication between the label and node has finished and connecting driver 35 to charge pump capacitor 23''.

In a third embodiment of the invention shown in figure 4 the charge pump capacitor can be replaced by an additional power supply such as battery 41. This battery can
25 be used as a 3V power supply in parallel with battery 5 when the label 1 is in normal use i.e. on stand-by or when displaying information. This extends the operating life of the label, the actual amount of extended life being determined by the size of battery 41. If battery 41 is identical to battery 5 then the life of the label 1 will be doubled. When the label has to transmit a signal and therefore needs a 6V
30 power supply, batteries 5 and 41 can be connected in series to produce a 6V voltage which can be used to charge transmitter capacitor 27. This switching can be

performed by the drive stage 23' of charge pump 23 under the control of control logic 33. While this embodiment has been illustrated by the use of an extra 3V battery having the same size as the normally present battery it is of course possible to use a plurality of extra batteries of any convenient size in order to achieve the desired result.

Although this improvement is shown implemented in connection with the embodiment of the invention shown in figure 3 it is of course possible to implement it on the embodiment of the invention shown in figure 2.

In all the embodiments of the present invention, if a delay in replying to messages can be accepted then when a signal addressed to the label is received the charging of the transmitter capacitor 27 can be delayed until enough of the message has to received to enable the control logic 33 to decide if a reply is needed or not. In a first case the message could use a part, or all of, the address of the labels being communicated to in a header or protocol and only labels mentioned in the header or protocol will react to the message. Non-addressed labels could deactivate their receivers for a pre-programmed period of time or a period of time mentioned in the message in order to reduce their power consumption while the communication is taking place with the labels mentioned in the message. If a reply will be needed then control logic 33 can command charge pump 23 to charge up the transmitter capacitor 27 on the addressed labels. If the message received is such that no reply is needed then the addressed labels execute the command but their transmitter capacitors 27 are left uncharged and therefore no energy is wasted in unnecessarily charging up transmitter capacitors 27.

The invention is not intended to limited to the embodiments described above but can be modified within the scope of the accompanying claims.

Claims

1. Method for controlling the use of power in an electronic label (1) comprising a power supply (5), receiver means (15), transmitter means (17, 29), switching means (31) for said transmitting means (17, 29), charge pump means (23) for producing a current at a voltage which is greater than the voltage of said power supply (5), control means (3) for selectively connecting said charge pump means to a transmitter capacitor (27), whereby said transmitter capacitor (27) is connectable to said transmitter means (17, 29) in order to supply said transmitter means (17, 29) with power at a voltage which is greater than the voltage of said power supply (5) characterised by the step of supplying said transmitter capacitor (27) with power from said charge pump (23) after a signal intended for said label (1) has been received by said receiver means (15).

2. Method according to claim 1 characterised by the step of said transmitter capacitor (27) being supplied with power from said charge pump (23) for a predetermined period of time or until a final message in a communication has been transmitted by said transmitting means (17, 29).

3. Method according to claims 1 or 2 characterised by the step of said switching means (31) being supplied with power from said charge pump (23) at a voltage which is greater than the voltage of said power supply (5).

4. Electronic label (1) comprising a power supply (5), receiver means (15), transmitter means (17, 29), switching means (31) for said transmitting means (17, 29), charge pump means (23) for producing a current at a voltage which is greater than the voltage of said power supply (5), control means (3) for selectively connecting said charge pump means to a transmitter capacitor (27), whereby said transmitter capacitor (27) is connectable to said transmitter means (17, 29) in order to supply said transmitter means (17, 29) with power at a voltage which is greater

than the voltage of said power supply (5) **characterised in that** said control means (3) comprises control logic means (33) which determine if a received signal requires a reply to be transmitted and which connect said charge pump means (23) to said transmitter capacitor (27) if a reply is required.

5

5. Electronic label in accordance with claim 4 **characterised in that** said switching means (31) is connectable to said charge pump (23) in order to be supplied with a voltage which is greater than the voltage of said power supply (5).

10

6. Electronic label in accordance with claim 4 or 5 characterised in that said charge pump (23) comprises an additional power supply (41).

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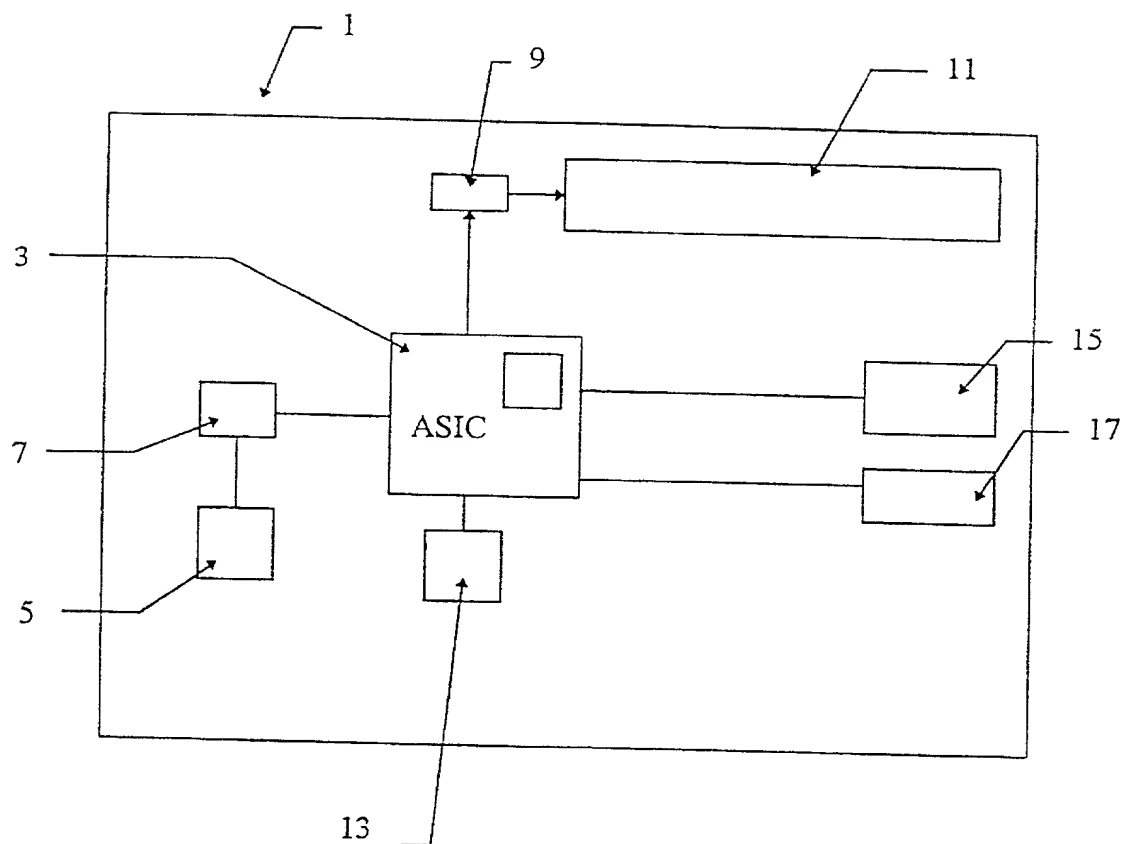
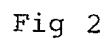


Fig 1



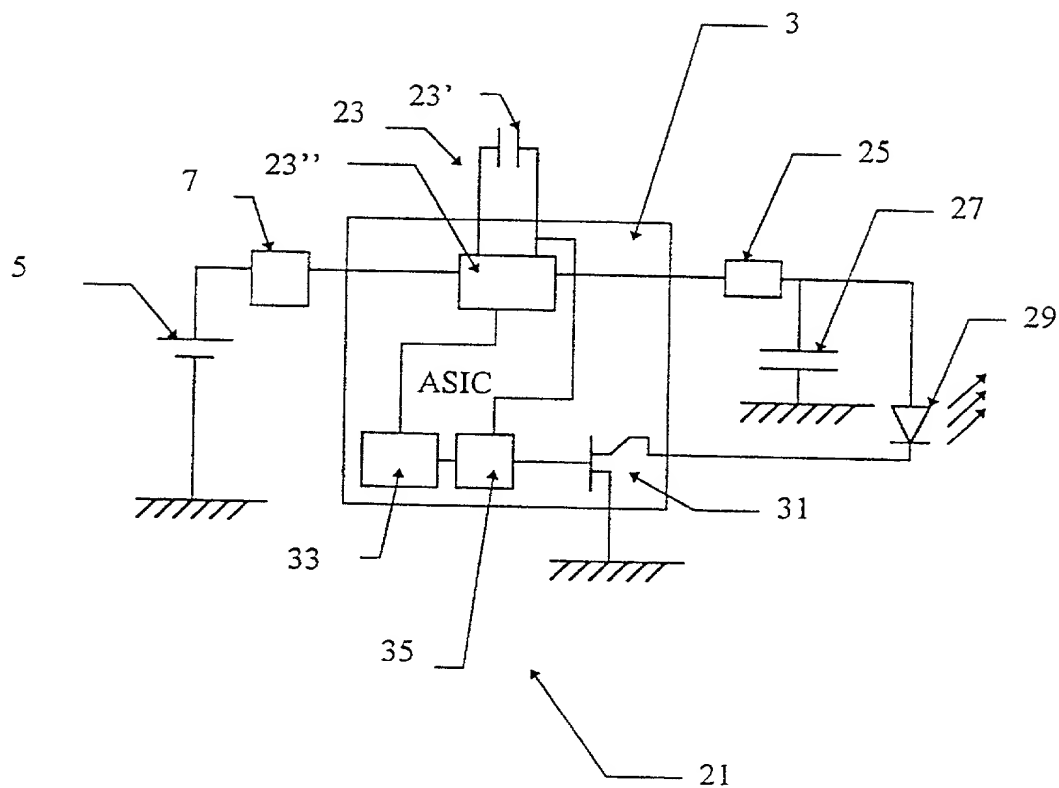


Fig 3

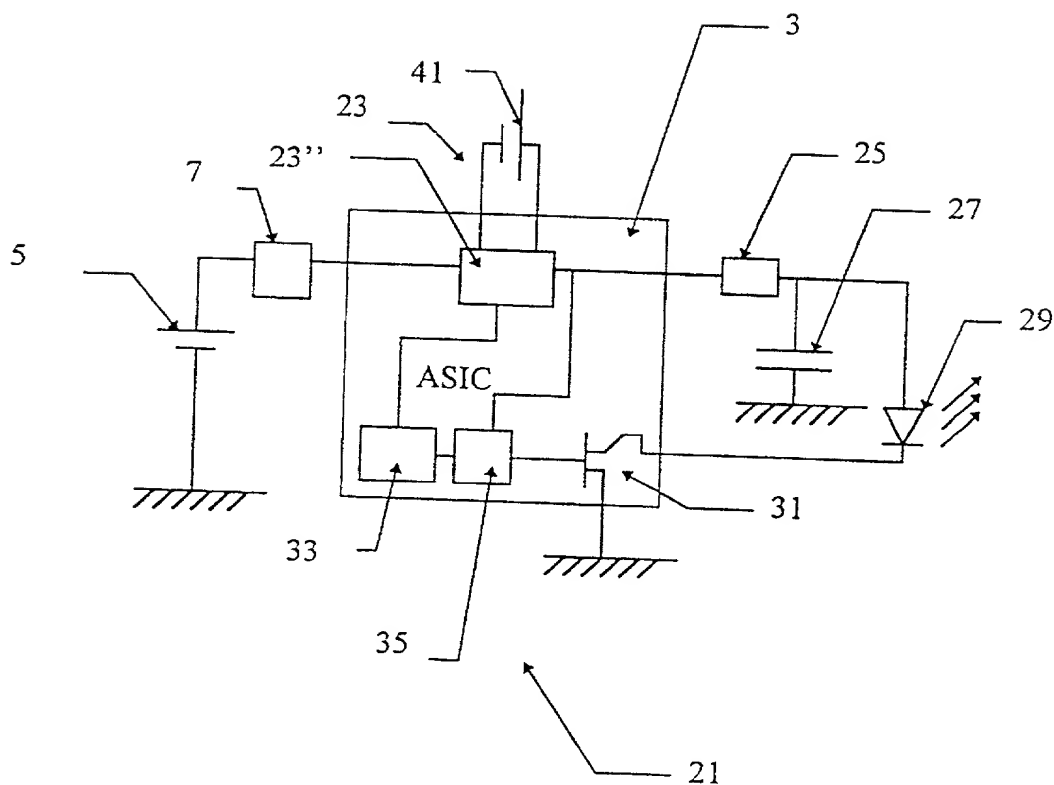


Fig 4

DECLARATION FOR NON-PROVISIONAL PATENT APPLICATION*

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below at 201 et seq. beneath my name.

I believe I am the original, first and sole inventor if only one name is listed at 201 below, or an original, first and joint inventor if plural names are listed at 201 et seq. below, of the subject matter which is claimed and for which a patent is sought on the invention entitled

Remotely Controlled Power Supply in an Electronic Label

and for which a patent application:

☐ is attached hereto and includes amendment(s) filed on (if applicable)

☐ was filed in the United States on as Application No. (for declaration not attaching application)

with amendment(s) filed on (if applicable)

☒ was filed as PCT international Application No. PCT/SE99/00821 on May 12, 1999 and was amended under PCT Article 19 on (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

| EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED PRIOR TO THE FILING DATE OF THE APPLICATION | | | |
|--|---------|--------------------------------------|---|
| APPLICATION NUMBER | COUNTRY | DATE OF FILING (day, month, year) | PRIORITY CLAIMED |
| 9801719-7 | Sweden | 15/5/98 | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| PCT/SE99/00821 | PCT | 12/5/99 | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> |

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

| PROVISIONAL APPLICATION NUMBER | FILING DATE |
|--------------------------------|-------------|
| | |
| | |
| | |

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

| NON-PROVISIONAL APPLICATION SERIAL NO. | FILING DATE | STATUS | | |
|---|-------------|----------|---------|-----------|
| | | PATENTED | PENDING | ABANDONED |
| | | | | |
| | | | | |
| | | | | |

* for use only when the application is assigned to a company, partnership or other organization.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

| | | | | |
|-----|---------------------------|-------------------------|------------------------------------|----------------------------------|
| 201 | FULL NAME OF INVENTOR | LAST NAME Andersson | FIRST NAME Lars | MIDDLE NAME |
| | RESIDENCE & CITIZENSHIP | CITY Uppsala | STATE OR FOREIGN COUNTRY Sweden | COUNTRY OF CITIZENSHIP Sweden |
| | POST OFFICE ADDRESS | STREET Blomgatan 10A | CITY Uppsala | STATE OR COUNTRY Sweden |
| | SIGNATURE OF INVENTOR 201 | | DATE 8/20/00-11-13 | |
| 202 | FULL NAME OF INVENTOR | LAST NAME | FIRST NAME | MIDDLE NAME |
| | RESIDENCE & CITIZENSHIP | CITY | STATE OR FOREIGN COUNTRY | COUNTRY OF CITIZENSHIP |
| | POST OFFICE ADDRESS | STREET | CITY | STATE OR COUNTRY |
| | SIGNATURE OF INVENTOR 202 | | DATE | |
| 203 | FULL NAME OF INVENTOR | LAST NAME | FIRST NAME | MIDDLE NAME |
| | RESIDENCE & CITIZENSHIP | CITY | STATE OR FOREIGN COUNTRY | COUNTRY OF CITIZENSHIP |
| | POST OFFICE ADDRESS | STREET | CITY | STATE OR COUNTRY |
| | SIGNATURE OF INVENTOR 203 | | DATE | |
| 204 | FULL NAME OF INVENTOR | LAST NAME | FIRST NAME | MIDDLE NAME |
| | RESIDENCE & CITIZENSHIP | CITY | STATE OR FOREIGN COUNTRY | COUNTRY OF CITIZENSHIP |
| | POST OFFICE ADDRESS | STREET | CITY | STATE OR COUNTRY |
| | SIGNATURE OF INVENTOR 204 | | DATE | |
| 205 | FULL NAME OF INVENTOR | LAST NAME | FIRST NAME | MIDDLE NAME |
| | RESIDENCE & CITIZENSHIP | CITY | STATE OR FOREIGN COUNTRY | COUNTRY OF CITIZENSHIP |
| | POST OFFICE ADDRESS | STREET | CITY | STATE OR COUNTRY |
| | SIGNATURE OF INVENTOR 205 | | DATE | |

POWER OF ATTORNEY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Lars Andersson

Application No.: TBA

Group Art Unit: TBA

Filed: Herewith

Examiner: TBA

For: REMOTELY CONTROLLED POWER SUPPLY IN AN ELECTRONIC LABEL Attorney Docket No.: 9435-021

**POWER OF ATTORNEY BY ASSIGNEE
AND EXCLUSION OF INVENTOR(S) UNDER 37 C.F.R. 3.71**

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The undersigned assignee of the entire interest in the above-identified subject application hereby appoints: S. Leslie Misrock (Reg. No. 18872), Berj A. Terzian (Reg. No. 20060), David Weild, III (Reg. No. 21094), Jonathan A. Marshall (Reg. No. 24614), Barry D. Rein (Reg. No. 22411), Stanton T. Lawrence, III (Reg. No. 25736), Charles E. McKenney (Reg. No. 22795), Philip T. Shannon (Reg. No. 24278), Francis E. Morris (Reg. No. 24615), Charles E. Miller (Reg. No. 24576), Gidon D. Stern (Reg. No. 27469), John J. Lauter, Jr. (Reg. No. 27814), Brian M. Poissant (Reg. No. 28462), Brian D. Coggio (Reg. No. 27624), Rory J. Radding (Reg. No. 28742), Stephen J. Harbulak (Reg. No. 29166), Donald J. Goodell (Reg. No. 19766), James N. Palik (Reg. No. 25510), Thomas E. Friebe (Reg. No. 29258), Laura A. Coruzzi (Reg. No. 30742), Jennifer Gordon (Reg. No. 30753), Allan A. Fanucci (Reg. No. 30256), Geraldine F. Baldwin (Reg. No. 31232), Victor N. Balancia (Reg. No. 31231), Samuel B. Abrams (Reg. No. 30605), Steven I. Wallach (Reg. No. 35402), Marcia H. Sundeen (Reg. No. 30893), Paul J. Zegger (Reg. No. 33821), Edmond R. Bannon (Reg. No. 32110), Bruce J. Barker (Reg. No. 33291), Adriane M. Antler (Reg. No. 32605), Thomas G. Rowan (Reg. No. 34419), James G. Markey (Reg. No. 31636), Thomas D. Kohler (Reg. No. 32797), Scott D. Stimpson (Reg. No. 33607), Gary S. Williams (Reg. No. 31066), William S. Galliani (Reg. No. 33885), Ann L. Gisolfi (Reg. No. 31956), Todd A. Wagner (Reg. No. 35399), Scott B. Familant (Reg. No. 35514), Kelly D. Telcott (Reg. No. 39582), Francis D. Cerrito

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(Reg. No. 38100), Anthony M. Insogna (Reg. No. 35203), Brian M. Rothery (Reg. No. 35340), Brian D. Siff (Reg. No. 35679), and Alan Tenenbaum (Reg. No. 34939), all of Pennie & Edmonds LLP, whose addresses are 1155 Avenue of the Americas, New York, New York 10036, 1667 K Street N.W., Washington, DC 20006 and 3300 Hillview Avenue, Palo Alto, CA 94304, all of Pennie & Edmonds LLP (PTO Customer No. 20583), as its attorneys to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, said appointment to be to the exclusion of the inventors and their attorney(s) in accordance with the provisions of 37 C.F.R. 3.71, provided that, if any one of these attorneys ceases being affiliated with the law firm of Pennie & Edmonds LLP as partner, counsel, or employee, then the appointment of that attorney and all powers derived therefrom shall terminate on the date such attorney ceases being so affiliated.

An assignment of the entire interest in the above-identified subject application:

- ☐ was recorded on _____ at reel/frame _____.
☒ is submitted herewith for recording.

Please direct all correspondence for this application to customer no. 20583.

ASSIGNEE:

Pricer AB

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Britt Sandberg

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NOVEMBER 13, 2000

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